

Application No. 10/058,284  
Art Unit 1742  
March 8, 2004  
Reply to Office Action of October 8, 2003

**AMENDMENTS TO THE SPECIFICATION**

**In the Abstract:**

Please amend the Abstract of the Disclosure currently of record as follows. A new Abstract of the Disclosure is also attached at the end of this reply.

**ABSTRACT**

~~Copper Foil to be Used in Laminate Sheet~~

A copper alloy foil to be used in a printed board ~~comprising~~ having a polyimide substrate is provided. The copper foil is not subjected to roughening plating and has hence fine surface roughness and can be directly bonded with the polyimide substrate. The copper alloy contains (a) one or more of the additive elements of from 0.01 to 2.0% of Cr and from 0.01 to 1.0% of Zr, or (b) from 1.0 to 4.8% of Ni and from 0.2 to 1.4% of Si. The surface roughness in terms of the ten-point average surface-roughness (Rz) is 2  $\mu\text{m}$  or less, the 180°peeling strength is 8.0N/cm or more. The alloy (a) has ~~has~~ 600N/mm<sup>2</sup> or more of tensile strength, and 50%ICAS or more of electric conductivity. The alloy (b) has ~~has~~ 650N/mm<sup>2</sup> or more of tensile strength, and 50%ICAS or more of electric conductivity.

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**In the Specification:**

Please replace the paragraph at page 3, lines 4-12 with the following amended paragraph:

The frequency of signals of electronic devices, such as a personal computer and a device for mobile communication is ~~being~~ increasing. When the frequency of electronic signals becomes 1GHz or higher, the skin effect, that is, when the current locally flows only on the surface of a conductor, becomes significant. When the current having a frequency of 1GHz or more is transmitted through the roughening-plated copper foil thus having a rough surface, such rough surface exerts significant influence upon the signal transmission. In order to avoid such influence, the required bonding strength should be ensured without the roughening treatment. Desirably, a copper foil without the roughening plating is laminated with a copper foil having fine surface roughness.

Please replace the paragraph at page 10, lines 21-26 with the following amended paragraph:

(7) Peeling strength. 180° peeling strength is measured in accordance with the method stipulated in JIS C 5016. Since the strength of copper-alloy foils varies depending upon their composition, each copper-alloy foil is adhered on the tensile-strength tester with double sided adhesive tape, and a polyimide film is bent into the 180°

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direction and peeled from the copper foil. The peeling width is 5.0mm.  
The tensile speed is 50mm/minute.